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Scientific Notices.

[ORIGINAL.]

LECTURES ON ANATOMY,

AS APPLICABLE TO THE ARTS AND SCIENCES,

Delivered at the Mechanics' School of Arts, Liverpool,

BY MR. ROGERSON, SURGEON.

LECTURE IV. CONCLUDED.

Let us proceed to the consideration and application of these mathematical laws, and see if mechanics will verify them.

The application of the law of sounding cords, which vary only in their lengths, is made by the mechanic in the construction of many musical instruments,—as the harpsichord and piano; and is shown by the musician in playing, as on the violin, guitar, and most stringed instruments. By varying the length we vary the number of vibrations, or the kind of sound given by cords so disposed as in the first proposition; and we can ascertain the number of these vibrations by mechanical calculation, from having the weight tending the cord, diameter, and length; but as sound depends upon the number of vibrations, the ear will furnish a ready mode of judging of the truth of this law, for, by varying the length, we produce a distinct difference in the sound. In general, the more rapid the vibrations the more acute the sound; and the more slow the more grave. In this manner one might produce, upon a single given cord, the different sounds of a musical scale, by varying the lengths, diameters, and weights. The vibration of a whole cord, of a given tension and diameter, will produce the primitive sound *ut*, or C; but if this cord be divided into two equal halves by a bridge, or any other contrivance, so that the two parts will be in unison, we shall find the sound different from the sound of the whole cord, and it will be what is called in music the acute octave of the first. The same will result if we diminish the diameter one-half, or quadruple the stretching weight. The acute octave of a given cord will then answer to a number of vibrations twice more rapid than the primitive sound, or than the whole cord; so that we can reduce the sounds, conveniently, to numbers, by arbitrarily taking the whole cord as a standard, and making the primitive sound equal 1, as representative of the number of its vibrations, and the acute octave will then be 2. If we still further reduce the dimensions of the cord to a third of its length, or to one-third of its diameter, or add a weight nine times heavier than the first stretching weight, we shall obtain *sol*, or G, or the number of vibrations which can be represented by the number 3, which is three times more acute than the fundamental sound *ut*, or the vibrating number 1. This sound can be readily distinguished if we cause to vibrate the whole of the two-thirds, and afterwards compare it with the one-third. If we still continue to subdivide this sonometer, or any other cord, suppose one-fourth of its length, and make this quarter vibrate separately, the number of vibrations will then be quadruple that of the entire cord, and the sound resulting from it will be, following the expressions of music, the double octave of *ut*. The other portion, which comprehends three-fourths of the cord being vibrated, will give the number of vibrations four-thirds of the primitive sound, or the musical word *fa*. In this manner, subdividing the cord, we might obtain all the sounds employed in music, but it will suffice to give the sounds of the gamut, which, taking for unity the number of vibrations by *ut*, we shall have the following table:—

GAMUT	C	D	E	F	G	A	B	C
Names of musical sounds	*ut*	*re*	*mi*	*fa*	*sol*	*la*	*si*	*ut*
No. of vibrations in the same time	1	$\frac{9}{8}$	$\frac{5}{4}$	$\frac{4}{3}$	$\frac{3}{2}$	$\frac{5}{3}$	$\frac{15}{8}$	2
Length of cord which produces them	1	$\frac{8}{9}$	$\frac{4}{5}$	$\frac{3}{4}$	$\frac{2}{3}$	$\frac{3}{5}$	$\frac{8}{15}$	$\frac{1}{2}$

It would appear from this that we could obtain from one cord, singly, all the various sounding vibrations, or all possible sounds; and, therefore, is a stretched cord adapted for all the purposes of the human ear; or is it an admirable piece of mechanism to form the tympanum, or drum of the ear? Animal mechanism must be more perfect, for against the usage of this form of substance may be raised innumerable objections, obvious to every one; witness the variety of the tension, length, and diameter required. If the cord is fine, it will only give the grave, with a very great length, and a very feeble tension;—if it is thick, one can succeed only with great difficulty to make it vibrate when it is short and much stretched.

These are some of the inconveniences of a single cord; but, in the construction of a stringed musical instrument, the mechanic will remedy them by the addition of many cords placed side by side, of different diameters, of different tensions, or of different lengths. If eight or seven cords, of the same nature, of the same thickness, stretched by equal weights, and of the relative lengths mentioned in the table, be placed side by side, as in an instrument, and made to vibrate, they will give effectively the seven notes of the gamut; but if we employ a greater number of cords, of which the lengths are successively doubled, quadrupled, and octupled of the preceding, we shall produce sounds which will be the octave, the double octave, or the triple octave of the first. In the more complicated instruments of music, such as the piano and harpsichord, we vibrate the cords of the different octaves by small hammers, which are put in motion by small pieces of wood, and are pressed by the fingers. The fingers of the same scale are placed side by side,—thus the finger D is the second, and placed after C, which is the first, E the third, &c., and so on throughout the scale; and in the same manner are also added other ranges of a different colour, and thus, by means of strings of different lengths, are obtained the various sounds. The same results, when we vary the weights or the degrees of tension; the number of vibrations may be doubled, tripled, or quadrupled, or multiplied at pleasure, by the addition of weights, or degrees of tension, because they are as the square root of their weights; thus, if a cord stretched by some weight give the first C in the scale, suppose one, the last C will have four, G will have nine-fourths, E twenty-five-16ths, and the rest will be easily calculated upon the same principle. These sounds are those produced by the whole length of the cord, varying according to the length, weight, and diameter; but independent of this, an attentive and exercised ear can detect a mixture, or a certain number of sounds more acute than the primitive note. If this primitive note C is, as we have before stated, expressed by the number one, we shall hear distinctly the sounds which are the double octave of the fifth, and also of the third, represented in the numbers of their vibrations by three and five. A well-exercised ear can distinguish still other sounds, as the octave of the first, or C, numerically represented by 2; and the double octave is also heard, of which the value is four; so that generalizing these results, a cord will sound at once, independent of its length, but with an intensity continually decreasing; the sounds which, following the series of whole numbers, are 1, 2, 3, 4, 5, &c., or, in other words, all those which are given by dividing the cord into an entire number of parts. It is this which gives origin to harmonics, which is the simultaneous resonance of a number of sounds pleasing the ear,—and what sounds are there more harmonious, more pleasing than those given by a series of whole numbers? There are none. Continued, or uniform sounds are produced by a repetition of similar beats, or vibrations; and all sounds which have a simple relation to each other are pleasingly agreeable to the ear either when heard together or in close succession; while those in which the coincident beats are further apart are either heard indifferently or shrunk from as harsh; and it is this intermediate sound, or harmonic, which increases manifold the sounds musical and delightful. In all these cases, the tension being constant, the uniform production of all these sounds is caused by the spontaneous division of the vibrating cord, without one sound or one vibration disturbing the other. This is a general principle of mechanics; and water, air, or any fluid material, can receive at once many very small motions without their effects being confounded. Every vibrating cord will furnish examples of these various sounds; there will be the vibration of the whole cord, and those of its divisions; but the most musical and most enchanting illustration of this coexistence of motions is given by the Æolian harp. The Æolian harp is a long box, or case of light wood, with harp or violin strings extended on its surface; these are generally tuned in unison with each other; and when this magic harp is suspended among trees, or placed in such situations that the fluctuating breeze can vibrate its cords, each of its strings, according to the mode of its vibration, will sound entire, or break into some of the simple harmonic melodies, thus producing the most pleasing combination and succession of musical sounds that can ever delight the ear or warm the imagination. This is nature's music; it is wild, observes no time, is played by an invisible musician, the vibrating air, keeps no regularity; but, after a pause, this truly fairy harp is often heard beginning with a low and solemn note, like the bass of some distant music; the sound then swells out, as if approaching, and other tones unexpectedly break forth, mingling with the first, and with each other. In this combined and varied strain sometimes one clear note predominates, sometimes another; sometimes an harmonic, and sometimes the whole are combined, producing an effect as if the instrument was played by a single musician, and, afterwards, at uncertain and unexpected intervals, joined by the whole or part of the band; and the concert thus made seems alternately to approach and alternately to recede, until, with the unequal breeze, this magic music insensibly dies away, and, for a moment, all is hushed again. It is no wonder, then, that the ancients, who knew not the nature of the air, the nature of simple sound, nor the nature of vibrating motions, should, in their state of simplicity, and with their poetic spirits, deem this wild,

delightful music supernatural, and should suppose that it was the strain of invisible beings descending from above among the gentle breezes of evening, to commune with man in a pleasing language of the soul, intelligible to both. Though modern science has taught us to disregard these poetic embellishments, and wild, fanciful explanations of our forefathers, yet who is there who can listen without emotion, without feelings of delight, to the wild, heavenly strains of the Æolian harp?

This co-existence of motion and division of partial vibrations may also be rendered visible to the eye. If we make a division of a cord, raising it by some slight substance, the vibration made at one end is communicated to the cord of the other part, but the oscillations of the two or more parts are constantly opposed. If, however, the cord be divided into geometrical equal parts of all its extended lengths, and if we place across these parts small pieces of white paper, doubled and light; but in the middle of these subdivisions we also place, in a similar manner, the like kind of paper of a different colour, and then gently vibrate the extended cord, all the pieces of coloured paper will be agitated and thrown off, while the white papers will remain in their situation. The reason is obvious, and demonstrates to the eye the existence of partial vibrations; the coloured papers are placed in the maximum vibrating points, and are immediately ejected. It is also on this principle that we obtain on the harp and guitar the harmonic sounds.

We can still produce various sounds from one cord, by the vibrations of another adjoining, of which the rapidity of vibration will be to it in the relation of unity to some whole number. If the first cord is *ut*, or C=1, and the second *ut* is sounded C=2, the former will put itself into motion from the other's vibration, and will, also, as the first, separate itself into equal parts, divided by nodes, or points of vibration. This fact is rendered sensible to the ear, and can also be demonstrated to the eye by the use of white and coloured paper, as in the last experiment; the white paper placed on the points of vibration will remain stationary, while the coloured ones, placed on the curves will be thrown off by the vibratory motions. These motions are effected by means of the atmosphere placed between the vibrating string and the others, producing sound as in an Æolian harp; for the air is vibrated by the motion of the first string, and communicates to the one adjoining that note, or harmonic motion, which is in unison with it. In music this phenomenon is continually met with, and it forms almost, in some shape or other, one of the daily occurrences of common life. If the bow is passed over the bass string, its harmonic is heard at the same time, which is the result of the harmonic vibration of the adjoining string. If a violin, near a guitar, is played justly, it will vibrate the analogous cords of the guitar which are in unison with it. If an organ is placed in a chamber, it very commonly happens that one or more of the panes of the glass window are in unison with some of its pipes, and its music is heard playing with that of the organ, sometimes very loud and distinct.

Such are the principal properties of extended strings placed in a horizontal direction; but of those which vibrate longitudinally our knowledge is more confined, for they have not received the same degree of attention. Their sounding properties are, however, much inferior to those effected horizontally, and their vibrations much less distinct. The mode in which these vibrations are effected is somewhat analogous to the vibrations of columns of air contained in wind instruments; but they are subjected to the same laws as the horizontal vibrations, that is, cords of the same nature, of an equal tension and diameter, have sounding vibrations proportional to the length of the vibrating parts; but the sounds are excessively more acute than those of the other position, because the elasticity proper to the matter of this kind, tends to bring the cord to its original position with a greater power than that horizontally. It is, then, on this account, found necessary to employ cords of a great length to render the sounds so grave that they can be distinctly appreciable.

Such are the principal properties of extended cords vibrated longitudinally and horizontally: are they adapted for the purposes of the human ear? It is evident that, by the assemblage of seven or more strings, there can be produced all the sounds of the gamut, and all the various vibrations necessary for the propagation of sound to the nerve of the ear. Has nature, then, shown less mechanical knowledge in the selection of a membrane like the tympanum, in preference to an assemblage of extended strings of various tensions? By no means. The mechanism of nature is always perfect, and the most elegant and most just pieces of workmanship are the models of art displayed by human mechanism. Cords, which produce sounds by longitudinal vibrations, cannot for a moment be admitted; because in the confined space of the human ear it is utterly impossible to find room for the necessary lengths. But could not an assemblage of cords of various tensions be advantageously substituted for the expanded membrane of the tympanum. It is true that here mechanism could so regulate the cords by giving them different degrees of tension and diameter, that the cords would return sound for the various vibrations, but the lowest bass string must be so thick that it could not vibrate. Besides, too, the ingenious mechanism of the ear, as at present constructed, must be changed, and instead of making the nerve of the ear distinguish sounds by means of a beautiful chain of little bones, a piece of machinery unnecessary for cords, the vibrating cords must tremble the air in the internal ear, and make the nerve feel sound exactly in the same manner as the strings of a guitar sounded by the impulse of the air vibrated by the cords of a violin, when its cords are in unison and harmony with those of the playing instrument. What, then, would animal mechanism gain by such an exchange? The answer is too obvious: every mechanic will readily reply,—the mechanism of the ear will gain nothing, but lose much. It will always first require a particular and uncertain unison; it will be like the wild irregular strains of the Æolian harp, tremble and vary with every passing breeze, lead its bewildered auditor astray, give him ideas of a thousand sounds which exist not, while neglectful of others really in being, instead of at present being, as it is, of unspeakable importance to man, making him sensible of the slightest, the greatest, and the infinitely varied vibration of sounding bodies, the channel by which a knowledge of speech is obtained, and through which the fascination of music enters, instead of being the ever watchful and true monitor of surrounding occurrences, and a sense of the highest importance and delicacy. Animal mechanism is truly wonderful, just, and perfect, and is truly a model of art, science, and ingenuity. *(To be continued.)*

The Traveller.

NARRATIVE OF A JOURNEY IN THE YEAR 1810,

By an unfrequented route, from Secunderabad to Bangalore, through Kurnoul, part of the Cedid District, by Gooty and Pennagondah, once the seat of Hindoo Empire, but now in ruins. Never before published.

BY AN OFFICER OF A MARCHING REGIMENT.

(Continued from our last.)

May 3d.—It was our intention to march early this morning, but the river —— had swollen so much from the late rains, that some of our carriages and followers that had marched early had to return to camp. Our march was therefore deferred till nine o'clock. In the meantime an embassy arrived from the Nabob, consisting of his brother, two Sirdars, the Company's Vakeel, and a number of followers. They were received with the honours and attention due to their rank by Colonel Gore and the officers of the regiment. The purport of their visit was to invite the Colonel and officers to wait on the Nabob.—About nine o'clock the regiment marched under the captain of the day and subalterns on duty. We proceeded to Kurnool, where we were politely received by the Nabob. The entrance to the fort is strongly defended by five gates, which run in a zig-zag direction. We had little time to make observations. The Nabob was prepared to entertain us with a nautch, (a dance,) and some well-shaped females appeared on the occasion. The Colonel had ordered the regimental band to accompany him; the Nabob seemed highly pleased with their performance, examined each instrument separately, and, as a proof of his satisfaction and liberality, gave them one hundred pagodas. To Colonel Gore he made a present of a horse and a cloth of some value, and to the rest of the officers a trifling present of cloth according to their respective ranks. The Nabob is a middle-aged man, not handsome; his eyes, however, are lively, and his countenance cheerful; his manners are easy and pleasing; and he appeared to derive satisfaction from making us as happy as the moment would admit of. I had almost forgotten to mention, that on our arrival on the 1st, he sent provisions ready dressed to the Colonel, as well as a number of melons, and forage for the cattle. We concluded our visit about eleven o'clock, and set off for camp through a very bad road, stony and jungly, where we arrived about one o'clock, hot, thirsty, and considerably fatigued.

4th.—Marched thirteen miles; road rather better. The face of the country diversified with hills, but the plains not well cultivated and but thinly inhabited. Encamped at a village called ——. Here was an ancient pagoda, that appeared deserted. Opposite the principal door was a very fine Sawmy bull finely cut in stone and highly polished. Over the door were innumerable figures of men and women, as well as elephants, neatly cut in stone. In the inside were two fierce-looking figures rudely carved in stone; and opposite an inner recess, which we did not enter, were three calves couchant, neatly cut in stone, the largest in the middle. There were other images of stone of which we could not guess the meaning. The roof of the building was supported by pillars of hard granite, covered with sculpture. At this place we found better water than we had since we crossed the Kistnah. The water about Kurnool is very bad.

5th.—Marched eleven and a half miles, road stony, with a good deal of jungle. The country thinly inhabited. Encamped at ——, pleasantly situated between two hills. I was unwell and did not enter it. On this ground we found Lieutenant-colonel Taylor, of the 8th regiment of native infantry, on his march from Bangalore to Hyderabad. He dined with us in the evening.

6th.—Marched nine miles and a half through a hilly country; road stony, and in some places bad. We entered this day the Company's territories, commonly called the Cedid Districts, having been given by the Nizam to the Company to pay the Hyderabad subsidiary force. It is, I learn, so well protected, and the ryots (farmers) have their property so well secured, that the Cedid districts yield a considerable surplus of revenue. The villages are well inhabited, and the face of the country bears marks of cultivation. The people were busily preparing the ground to receive the seed.

7.—Marched about nine miles. A cloud which had for some hours overhung our encampment, and which we thought would pass away, shortly after we commenced our march, poured down upon us in a torrent, and in less than a quarter of an hour we were all wet to the skin, although, a few miles in front of us, our quarter-master did not receive one drop. As the sun rose the cloud dispersed, and we arrived at Beapilly about half-past seven o'clock. This village is large and populous, situated at the bottom of a rocky hill that had lately been fortified, but was now suffered to fall in ruins. I ascended to the

ummit of it, and had a picturesque view of a great extent of country, interspersed with hills of no great elevation; had a view of Gooty, the Gibraltar of the East, distant 13 miles, which we intended to make our next stage. In the centre of this village was a Sawmy coach or carriage covered with figures in bas-relief, some of which were placed in the most indecent postures. In this village I had the first opportunity of seeing the Indian looms, and their manner of weaving. The looms are constructed in so simple a manner that a European, who has seen weaving machines in Europe, cannot but be astonished at the simplicity of them. A hole is dug in the floor of the hut, in which the treadles are placed, a few strings of different degrees of thickness are hung over it, to which are suspended two pieces of wood that embrace the reed, as well as the rest of the necessary apparatus, which I cannot describe scientifically. To a peg driven in the floor, at some distance, is fastened the unwoven part of the web, which the workman has the power of tightening or slackening at pleasure, by a fastened rope running to a peg within his reach; the woven cloth is rolled round a small beam that keeps the web stretched and kept fast in the simplest manner. The person we saw at work seemed pleased at our examining the effects of his ingenuity; it was a party-coloured cloth of silk and cotton; I thought it very beautiful; it certainly was very fine, and the workman had attained great expertness in handling his shuttle, which I remarked to be of horn, and which ran with great ease over threads which I thought very delicate. The elevation of the web from the ground was no more than six inches. In this village supplies were sold in abundance at regulated prices; the Company having peons stationed in the different villages who regulate the markets according to valution, fixed upon by the collectors, and which prevents strangers being imposed upon.

8th.—From Beapilly to Gooty is 13 miles; the road is bad and very stony, the country hilly and barren. Along the road, and on the face of the hills, grew abundance of a kind of milk hedge, which, on any part of it being cut, or broken, yields a great deal of juice as white as milk, but of a burning and most poisonous quality. It is difficult to conceive what use nature intended this shrub for, as it cannot be applied to any useful purpose that one can think of. We were cheered on the road by having now and then a sight of the Hill Fort of Gooty. We encamped on very stony and sandy ground, about half a mile from the Pettah. Here it was our intention to halt for some time, as some of the men's tents required repairs. We were obligingly invited to dine with the officers of a detachment of the 56th regiment, doing duty in the garrison, on the evening of our arrival; and also invited by the officers of the 25th native infantry to dine with them the following evening. We were liberally entertained at each of their messes, and on the next evening the officers of the whole garrison dined with us in our mess tent. About ten o'clock a squall came on, with heavy rain, that had nearly overturned our tent; some of our mess utensils were broken; the tent, by great exertion, was kept from being thrown down, and, as the squall was of short continuance, we again sat down, and did not think of departing till a late hour. Here we found it necessary to halt for three days.

To halt three days at Gooty and not visit the Hill Fort would be a crime of an unpardonable nature, although the attempt from its appearance is sufficiently discouraging. I visited it twice, and though much fatigued from the length and steepness of the road, I was sufficiently repaid for my trouble. Gooty, properly speaking, consists of three hills, two of them are of considerable elevation, inclosed round their summits with a strong stone wall with bastions; and joining the third hill on which the fort is built, the steepness and perpendicular height of which is truly awful and sublime. It appears to be so secure by nature, that art was almost superfluous, and yet fortified by art as if nature had left it open. Between the two lower hills runs a valley about three quarters of a mile in length, which you enter by two very lofty and strong gates, over which a guard mounts. Through the middle of this valley a street of good breadth and tolerably clean runs to the foot of the Hill Fort. On either side of the street are houses and native huts promiscuously built, and some good barracks lately erected by the Company; some of the officers have also built neat bungaloes in this lower fort, but the heat must be insufferably intense from the confined situation, and from the reflection of the rocks on either side. At the termination of this street is the burying ground for Europeans, and from the number of tombs judgment may be formed that Gooty must be an unhealthy situation for Europeans. Here the ascent commences in a steep and winding direction. The road, however, is made with considerable attention to the ease of the traveller; it is broad and paved with large stones, neither closely nor elegantly laid. The first winding direction consists of 109 paces, where you come to an obtuse angle of 40 paces. The next winding is 378 paces, terminating in an acute angle. The third winding is 242 paces; and the next turn, about 35 paces, brings you to the first wall of Mara Gooty. Here you are upon a level with the lower hills; and not many paces above this you enter, by a strong gate, this lower garrison, on which very excellent barracks are built by the Company, and where a detachment of his Majesty's 56th regiment was then doing duty. This place is of considerable extent, and strongly fortified; notwithstanding which it might be easily taken, if the upper hill did not command it with awful majesty. On the right, as you enter, there is a tank of about fifty feet diameter, partly natural and partly artificial, and it had then, in the dryest season, a good deal of water. Going round this basin you turn to the right, and begin to ascend through a road tolerably good; on the left are precipitous rocks, on the face of which the road is formed; to the right is a strong wall, with loop holes and strong bastions; and below is a deep dry ditch. By 144 paces you come to the second gate, very strong; and by 220 more, to a strong battery, after which you turn to the left, and come to the third gate; at the bottom of a fearful ledge of rocks, by thirty-one paces, some of them regular stairs, you come to the fourth gate; and in the distance of 158 paces you pass three other gates equally strong with the lower. You ascend to the seventh gate by thirty-four regular stone steps and seventy-eight paces, after which the road winds round the hill 364 paces: the road is level. On the right is a reservoir, about 100 feet diameter, which had then a good deal of water, very clear; after passing the reservoir the road winds to the right, where you meet an excellent guard-room, (lately built,) and where a sergeant and havildars guard, mount, and furnish sentries over some native petty Rajahs and Zemindars, who have been confined here for many years; ascending by forty-one stone steps you come to the eighth gate; and passing it fifty-seven paces you ascend by fifty-one stone steps to the ninth gate, on each side of which is placed the figure of an elephant, well cut in stone. Passing the 9th gate, on a small plain, is built a magazine, bomb proof, about sixty feet in length and twenty in breadth: 106 paces and fifteen stair steps, in a winding direction, take you to the tenth gate; and fifty-one paces more to the eleventh gate: on entering it you turn to the left, where there is an excellent natural basin, in the solid rock, containing very good water, of which I drank, and found it fresh and palatable; fifty paces and thirty-four stair steps more bring you to the twelfth gate; winding to the right, thirty-two steps, you arrive at the thirteenth gate; and by forty-nine stair steps more you arrive at the fourteenth gate. All the above-mentioned gates have very strong doors, bolted and clamped with iron, and have iron bars of proportionate magnitude; eighteen paces more bring you to the last gate, which does not appear even to have any door leaf. On the left is a barrack, capable of holding fifty men. In the centre of this area, which is on the pinnacle of this stupendous rock, is erected a turret, fifty paces in circumference, and about fifteen feet high, which you ascend by a wooden stair to the flag staff. To look down from this awful height filled the imagination with indescribable sensations of terror and pleasure. I had a bird's eye view of an amazing extent of country. Ballary hill, fifty miles distant in a westerly direction, was plainly seen. The plain of Gooty, about thirteen miles in breadth, and thrice that distance in length, appeared like a large sea; the hills terminating the view appearing like dry land. But to the north and east the prospect, though dreary, appeared more sublime. The hills and valleys appeared like the mountainous waves of the ocean in a storm. It being now getting very hot, we began to descend by the same road. Observed a building on our left, of great extent, flat roofed, in which, we were told, were kept commissary stores. Examined batteries and bastions, part of which are now falling into ruins. Saw but few iron guns, and those dismounted. Visited some of the prisoners; none that I saw were in close confinement, and I understand they are well treated. I cannot describe the emotions I felt on being conducted to the hut where a Rajah and his son were confined. He was sitting on a small carpet: his son was standing by him. On our entering an outer court he rose up and gracefully made his obeisance, which we were not slow in returning. My mind instantly and intuitively fancied his former splendour, and his now degraded state—cut off, in a manner, from the world. I compared my own state of liberty with his confinement: his beautiful son, his joy and hope, a youth of about twelve years of age, confined along with him. A crowd of the tenderest ideas rushed upon my mind; nor would I exchange the sensations I then felt for any earthly gratification. My mind was too full for utterance: it wished them happier days. I turned about and left them. Although I had no further desire to see any of the prisoners, yet the clanging of chains at a short distance drew my attention. I entered another hut where there were three or four more with irons on their legs. One very lusty person was sitting here without irons. Whether it was that my mind exhausted itself on the former occasion, or that the sight of the leggings made me conceive them criminals, certain it is they appeared to me sullen and ferocious, nor could I bring my mind to feel for them as I did for the first I visited. We continued to descend through the same and only road that we ascended, and before I got to the bottom of the hill I was a good deal exhausted. The rock and fort of Gooty appears to me impregnable if defended by European skill and European bravery. An immense force might starve the garrison to a capitulation; but such is the number of batteries above battery, which might be brought to bear on the besiegers, that any work constructed below that might be soon silenced; and such is its natural strength, that that could have but little effect upon it. Notwithstanding its natural and artificial strength, it has been taken twice, first by Hyder Ally, and then by the English. It is reported, but I believe with little foundation, that when Hyder bombarded the place, his cannon was so powerful as to shake the whole hill, by which their plentiful supply of water was drained away, or dried up. I question much this relation, and attribute its having capitulated to Hyder to natural causes, either to the garrison being ill supplied to hold out a seige, or to the pusillanimity of the besieged. The fall of Seringapatam, the death of Tippo, the fall of many of his other forts, and it is said the influence of British gold, made Gooty an easy conquest to the English.

(To be continued.)

ERRATA.

In the first portion of this Narrative, which appeared March 30, third line from the top, for Gooty, read Gooty.

In the third paragraph of the 15th day, line 1, for Sindars, read Sirdars.

In the fifth line of the 20th day, for Furruckmegzur, read Furrucknuggur.

In the fifth line from the bottom of the 21st day, for jaghirdars, read jaghiredars.

Poetry.

RETROSPECTION.

Beside Time's rapid stream I stood,
And for a moment dared
Backward to look upon that flood,
And then my heart despaired;
For, ah! its golden shores I saw,
At distance, far away,
And there beheld with trembling awe,
What language fears to say!

A glorious company there stood,
Shades of the buried dead;
Spirits that long have past to God,
From earth to heaven fled!—
Kindred, and many a friend, alas!
The aged, and the young;
These mirror'd fair in memory's glass,
The soul with anguish wrung!

And Happiness, with faded brow,
There heavenward looked for aid!
And there, with broken shaft and bow,
Slow paced Love's spectre shade:
And Pleasure knelt beside the bier
Of long-departed Joy;
And Melancholy, wandering near,
Beheld her silently!

And now the golden shore was lost,
And rocks above it rose,
The whitening billows high were tost;
The scene was rife with woes!
For sweet Content was banished quite,
And Happiness had fled;
And all that wore the form of light,
Deep buried with the dead!

And then I turned me from a scene
So harrowing to see,
And sought to banish what had been,
With hope of what might be:
But all in vain!—still, cloud on cloud
Above th' horizon rose;
And still the spirit was subdued
By fast-succeeding woes!

And gazing now upon the stream
By which I pensive stood,
Methought that fleeting as a dream
Rolled on that billowy flood;
And waiting but another wave,
Perchance upon its breast,
And I, borne onward to the grave,
Securely there might rest!

And then no more the golden shore,
The glories of the past;
The wearied spirit bade deplore,
And weep what could not last!
For ah! unlike the gentle flower
That hails returning spring,
The heart knows no reviving power;
It lives—a blighted thing!

But short its withering,—and above
I raised my tearful gaze,
And there beheld unchanging love;—
Eternity of days!—
And happiness without alloy,
Immortal, and serene,
A bland, and ever cloudless sky,
A heaven-portraying scene!

It was enough!—the present, past,
And *future*, rose to view,
And fondly clinging to the *last*,
I sought to bid adieu
To vain regrets, and useless tears,
And all to earth that clung;
While Hope unfolded brighter spheres,
And soothed with angel tongue!

Liverpool. C.

MARTIN'S FALL OF NINEVEH.

To those unacquainted with the history of this magnificent city (considered to be, perhaps, the most so of any in the world,) the following description, from the poem of Mr. Atherstone, may be read with more interest than the ordinary prose style, inasmuch as it gives a very fervid description of the above splendid picture.

"Close to the palace, in the city's midst,
A lofty mound, like to a mountain stood,—
Work of Semiramis, long ages back,
To honour Ninus, her loved lord and king,
Whose ashes slept beneath. The founder he
Of that great city, which from him took name;
For when, victorious o'er unnumbered lands,—
From Egypt and Propontis stretching east
To Bactria, whose impassable hills awhile
Drove back the flood of conquest,—he returned,
Exulting in his might,—'I will build up
A city'—he exclaimed—'the like of which
On earth hath never been,—and shall not be.'
Then by the banks of Tigris he traced out
Its boundaries; a three days' journey round,
And oblong square its shape. A million hands
Toiled then upon the work. A hundred feet
He made the walls in height; in thickness such,
Three chariots on their summit, ranked abreast,
With amplest space between, might try the race.
Above the walls, and twice their height, arose
A thousand and five hundred warlike towers;
Of massive brass at ev'ry tower a gate.
The city with a like magnificence
He fashioned;—palaces and temples huge,—
Fountains, and baths,—and gardens, high in air
Uplifted, where the cedar and the palm,
As on the mountain's top deep rooted, waved
Their giant heads;—and o'er broad Tigris threw
A ponderous bridge. Thus in his pride did he:
And never since upon the earth hath been
A city like to his. But then he died;
And was consigned to dust: and over him
This mound, for an eternal monument,
Semiramis upthrew. Above the walls—
Above the towers high soaring it arose;
A beacon to the traveller far away,
Who there at morn the sun's first glory hailed,
And blest his latest beam at evening there.
Upon the top a rich pavilion stood;
Where, in the sultry hours, Assyria's king,
To wanton in the cooling breeze oft went,
That still was stirring there, while NINEVEH
Drew fever breath below. A smooth firm path,
From base to summit, like a serpent's train,
Around the mountain coiled. Unnumbered shrubs,
And trees of graceful form and every flower
That scents the eastern breeze, were planted there,
Making of that huge monument of death
A garden of delight." *Book IV.*

SONG.

The moon sheds her light on the earth and the seas,
And scarcely the dark wave curls under the breeze;
'Tis the hour of repose, when the tyrant and slave,
Are one in their slumbers, as one in their grave.

The angel of rest, and the spirit of love,
On their light downy pinions are hov'ring above;
And the soul is as calm as the souls of the blest,
When the cares of the world are for ever at rest.

Though all is now silent, and nature is mute,
Yet the song of the Bulbul and chords of the lute
Sound softly and sweet on the breast of the night,
By the stars as they sparkle with tremulous light.

And such was the mildness, and such were the hours,
When together we sat in the jessamine bowers,
In the land of my home, in my own native Spain,
Which perhaps I shall never revisit again.

But my love and my heart are for ever with thee,
In the land of the slave, or the land of the free;
And the loss of my friends I shall never repine,
Since I can possess such a friendship as thine.

Without sorrow or sadness we'll look on the past,
And resignedly yield up our souls at the last,
With the hope that in heaven they again will unite
In the regions of bliss, in the place of delight.

Liverpool, April 2, 1830. J. H. D.

THE FAIR SEX.

(From the New Monthly Magazine.)

When Eve brought *woe* to all mankind,
Old Adam called her *wo-man*;
But when she *woo'd* with love so kind,
He then pronounced it *woo-man*;
But now with folly and with pride,
Their husbands' pockets trimming,
The ladies are so full of *whims*,
That people call them *whim-men*.

METEOROLOGICAL DIARY.

[*From the Liverpool Courier.*]

Barometer at noon.		Extreme during Night.		Thermometer 8 morning		Extreme heat during Day.		State of the Wind at noon.	Remarks at noon.
Mar. 31	29 62	42	0	45	0	49	0	N.W.	Rain.
April. 1	29 62	34	0	39	0	45	0	N.E.	Cloudy.
2	29 60	32	0	35	0	41	0	N.E.	Cloudy.
3	29 58	31	0	34	0	41	0	N.N.W.	Fair.
4	29 93	32	0	37	0	45	0	W.N.W.	Fair.
5	29 95	34	0	37	0	48	0	W.N.W.	Fair.
6	29 53	38	0	46	0	50	0	W.	Cloudy.

2d, Eight, a.m. snow; three, p.m. snow.
3d, Snow during night to ten, a.m.
6th, One, p.m. rain.

REMARKS FOR MARCH.

Monthly mean of atmospherical pressure, 29:83; mean temperature,—extreme during night, 41:21; eight, a.m. 45:11; noon, 51:8; extreme during day, 52:03; general mean of the month, 47:18; prevailing winds, westerly; maximum of the month, (28th,) 63; minimum, (8th,) 33.

Summary of the month.—17 days fair, 4 stormy, 9 cloudy, and 1 rain.

Tide Table.

Days.	Morn. h. m.	Even. h. m.	Height. ft.	in.	Festivals, &c.
Tuesday ..13	1 49	2 7	15	6	Easter Tuesday.
Wednesday 14	2 26	2 46	14	5	
Thursday 15	3 8	3 34	13	4	
Friday 16	4 2	4 35	12	3	Moon's Last Quarter.
Saturday..17	5 13	5 56	12	1	[Low Sunday.
Sunday....18	6 38	7 17	12	7	First Sunday after Easter.
Monday ..19	7 54	8 26	14	0	Alphege.
Tuesday ..20	8 55	9 22	15	1	

Scientific Notices.

PHENOMENON OF AN IVORY BALL—ELASTICITY.

(Continued from our last.)

TO THE EDITOR.

SIR,—I am sorry to be compelled to refuse the aid of your wood cuts as given in the last *Kaleidoscope*. I care not how the needle lies when the ball meets the slab: be the needle poised equatorially or polarly as regards the point of contact, it matters not, for the whole mass of the ball must change its form, if collapsing take place, and consequently the needle must shift or break, one would think, and by so doing, give us some little farther insight into this strange affair. Again, suppose this same needle, along the whole length of it, was serrated, or had teeth like a saw, why, then, if collapsing take place in the ball, certainly every tooth ought to be torn or broken off the needle in the process of collapsing.

Again I must differ with you when you say that "the effect on the needle has nothing to do with the rationale of the experiment;" in my view of the matter the effect on the needle has every thing to do with it, and it was to watch the effect upon the needle, and with that intent alone, that I introduced the needle to your notice and to my own.

You make use of the term "the apex of the ball:" a sphere has not any apex.

You say, too, in your notice to correspondents in the *Mercury*, that *J. M. B.* has given you a solution of the problem.

I should like much to see that solution; it is one of the greatest desiderata in the scientific world. I suspect *J. M. B.* has not yet solved the mysteries of elasticity. I think it more than probable that collapsing does take place; but to say so, or to think so, is not a solution of the phenomena of elasticity.

J. M. B. substituted a penny marble for my billiard ball, and you substituted two billiard balls and a cue for my billiard ball, but this is only multiplying instances; the solution is still required.

Liverpool, April 8, 1830. INTERROGATOR.

Although our correspondent in his abrupt fashion says he cares not how the needle lies when the ball meets the slab, other people, who will examine the matter more closely, will admit that that circumstance has much to do with the result. If when the ball strikes the slab, the needle should be in a position perpendicular, or nearly so, to the plane with which it comes into contact, as represented by figure 1 in our last, then the result we described last week will in all probability take place:—we say in all probability, not wishing to be dogmatical, as the experiment has never yet been made. *Interrogator* does not attempt to invalidate our reasoning, and in that forbearance he has shown some prudence, for we can assure him that several gentlemen much versed in such investigations, when we read over to them our remarks on the subject of last week, expressed their entire concurrence with our views.

Interrogator talks of the needle being serrated, but he has omitted to tell us how such jagged needle could be fixed, embedded in an ivory ball. No workman living could contrive to do it, and it is therefore little better than waste of time to reason upon a theory which cannot be brought to the test of practice.

Interrogator says, that if the ball collapse the whole mass must change its form. We have do doubt of the fact; but what does it prove? If we strike one end of a long balk of timber with a hammer, the vibration, or in other words, motion, (for there is no vibration without motion,) will pervade the whole mass, but the contraction will not be so great at the further end as at the end which was struck; it will diminish as it travels towards the extremity. In like manner the vibration of the ivory ball will be the greatest in that part which comes into forcible contact with the marble slab, and will be comparatively languid before it reaches the antipodes, which word we here adopt in deference to *Interrogator's* objection to apex, which, however, we maintain to be correct;—but of that more anon.

We shall say no more of the imaginary case of the serrated needle, but confine ourselves to the plain needle inserted through the ball, as supposed in *Interrogator's* first letter, in which he asks if the needle might not be broken?—thereby inferring, by anticipation, that if the experiment were made, and the needle were not broken, the collapsing had not taken place. If this be the inference he would deduce, it is, in our opinion, a *non sequitur*, because the needle possessing itself some elasticity, might vibrate simultaneously with the ball, which we think would very likely be the case if it were, as we take for granted, driven so firmly into the ball as to form, as it were, a part of its substance.

We do not at all think with *Interrogator*, that the solution of the problem is one of the greatest desiderata in the scientific world. It would be infinitely more difficult to solve the problem if the ball did not collapse, as it is impossible to conceive elasticity without accompanying motion. There must be an action, or collapsing, or there would be no rebound: the one is cause, the other effect.

Interrogator seems determined that the ball shall be dashed down with violence, instead of being treated in the way we have recommended; just as if a bright, circular, well-defined polished spot, as large in diameter as a large split pea, were not as good evidence as a spot the size of a sixpence. Why run the risk of splitting or spoiling a good ball, worth five or six shillings, when the experiment may be as satisfactorily, and much more elegantly performed, with a smart stroke of a cue?

Interrogator's objection to the term apex is a mere quibble. We know that a sphere, considered of itself, has no apex; as a circle has neither beginning nor end: but a ball placed on a plane has a top and a bottom; and as the word apex is only another name for top, we maintain that that part of the ball which is the furthest from the point in contact with the marble slab may be called the apex.

Interrogator may have seen a semicircular hill, and we fancy he will admit that the highest pinnacle of that hill is the top, or apex. In like manner the part of a globe, which, when placed upon a horizontal plane, is the furthest removed from it, is the apex, or top.

If a solid globe were placed upon a table, and a fly B were to walk from the table round that globe, would any body deny that as it proceeded from A towards B it would be moving up, and that when it had arrived at B it would be said to have arrived at the top, or apex?

If, instead of a globe placed on a horizontal surface, we had been speaking of our spherical globe moving through space, the term apex would have been absurd; because all points of the circumference being equidistant from the centre, there can be no up nor down: but as applied to a globe placed on a table or marble slab, the expression is quite correct.

Before we conclude, we must repeat our wish, that some competent person would take up this matter, not for our own satisfaction, but that of others; as we are as firmly convinced that an elastic ball must collapse before it can rebound, as that cause must precede effect. The following paragraph on this subject, from the *Mercury* of last Friday, may be appropriately introduced here:

"As many persons who may wish to try the experiment may not have access to a billiard table, we will inform them how they may perform it at home, provided they have an ivory ball. Rub the face of a common smooth hammer very well with black-lead dust, such as is used for polishing grates, then placing the ball upon a bed, or on the soft ground, give it a smart stroke with the hammer, and there will be left a bright polished circular spot impressed on the ivory, smaller or larger, according to the force of the blow."

One more word about making the experiment with a black-lead pencil mark, instead of smearing the ball with black-lead dust, which is very nasty to handle, or paint, which is little better. The mark should be made with the best lead pencil, and a spot about the diameter of a shilling should be as deeply shaded as possible; then, if a white ball be driven against it, a bright circular spot will be left upon its surface—small or large in proportion to the smartness of the stroke. We have seen these spots produced as large in diameter as the fourth part of an inch, highly polished, like little mirrors.

Interrogator complains that he has received no solution to the problem; which reminds us that we made a mistake in saying that *J. M. B.* had furnished such solution. We ought to have said he had supplied an illustration. No man living can solve the problem, if *Interrogator* means by a solution an explanation of the *manner* in which the ball collapses, or the cause of elasticity. We know no more of its cause than we know of the cause of gravity, of magnetism, or, in short, of any thing else. When a stone falls, we call that the effect of gravity, but what that gravity is we know no more than the stone itself. But whilst we confess that we are utterly ignorant of the reason why an ivory ball collapses when struck by another ball, or dropped upon a marble slab, we have very strong grounds to presume that it does so collapse, because the large spot we detect upon its surface can be in no other way accounted for, as we believe that an experiment with the black-lead pencil has shown the absurdity of the supposition that the spot is occasioned by the spirting of the colouring matter.

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Tales, Romances, &c.

[ORIGINAL.]

THE GENIUS OF PERSEPOLIS.

PART V.

(Continued from page 195.)

"Immolat, et poenam scelerato ex sanguine sumit."
Virg. Æneid, 12.

"During the latter part of your narrative," said Hamed, when the Genius paused, "I have remarked in yonder mirror an individual who appears even more ferocious and determined than the fiercest of the savage tribes which you have been describing; and there appears at the same time a mystery about him, which seems, to my untutored sense, remarkable."—"That individual," replied the Genius, "is one of as daring and dangerous an employment as ever mortal practised:—but, better to illustrate his true character, I will give you a sketch concerning one of the members of his tribe.

"The descending, though still fiery beams of an Indian sun, reflected on the swelling waters of the rapid Nerbudda, might have vied in brilliancy with the most gorgeous treasures of an Eastern mine; the faint murmur of the shrivelled leaves, as the gentle breeze crept among them, might be compared to the feeble sighs of mortality, exhausted by a recent fever fit; the panting birds hid their refulgent plumage amid the thickest branches; and the ravening tiger plunged into the deepest recesses of the tangled jungle, to escape from the long-continued and still glowing fervor of the god of day.

"Beneath the wide-spreading and verdant colonnades of a large banian tree, extending its thousand natural vistas around, and affording a delicious shade to those within them, was assembled a group whose countenances plainly indicated that some events of considerable importance were on the eve of taking place: yet did the features of each denote that no two of the principal personages present looked forward to the approaching crisis with similar ideas. Here, attired in Eastern splendour, stood Kosrou Schah, candour

and benignity uniting upon his open brow, and beaming from his upraised eye, whilst at the same time his slightly compressed lip gave a decided character of determination to his manly countenance. At his right hand, (half supported by two damsels, the extreme duskiness of whose complexions afforded a striking contrast to the fair and dazzling loveliness of their gentle charge,) stood Mhirra, the pride of Cashmere. Never did more beauteous blossom spring from a corrupted stem; never before did an element so spotless flow from so polluted a source.

"Her father, Furrukhsir, excited by the restless and discontented spirit ever attendant on inordinate ambition, had left his native Cashmere, with his only daughter, (then an infant,) to seek for more stirring and unsettled regions than his paternal land;—that Paradise of the East was peopled with spirits too placid to assimilate with his; her wood-crowned hills, rising in splendid majesty above luxuriant, flower-enamelled valleys; her diamond streams, and gales pregnant with fragrance, pleased not him: the Eden his dark soul panted for was a despot's throne, surrounded by crouching slaves: for this had he forsaken his peaceful home; for this had he toiled, and this he had at length obtained.

"Chance had conducted his wandering steps into the province of Guzerat, at a time when the inhabitants, (at all periods a wild and ferocious people,) felt discontented and disaffected towards the mild government of Kosrou Schah, their rightful prince. They delighted in warfare and plunder, and deemed that, during the 'piping times of peace,' their lives were spent in vain. This state of things appeared highly favourable to the designs of Furrukhsir, yet was he far too wary to proceed to extremities before he had attained some more certain prospects of success than the similarity of disposition and wishes between himself and a disordered multitude. His natural abilities were strong, and his powers of deception of the first class: by the exertion of these he gradually won upon the confidence and esteem of the liberal-minded and unsuspecting Kosrou, who, guiltless of deceit himself, never looked for it in others. Step by step did the deceiver advance in the favour of the prince, until he found himself the undisputed holder of the chief office in the state;—then did he first begin to work upon the minds of the commonalty; binding the ambitious to him by appearing always eager to forward their interests, and darkly hinting at the same time, that had he the power of his master, their most aspiring wishes should be shortly gratified; thus, at the same time, uniting them more firmly to himself, and increasing their dislike to their present mild and conscientious Monarch. To the fierce and tumultuous he insinuated how glorious would be the conquest of some neighbouring province; and with the desire of the plunder therefrom accruing, bound the avaricious to his cause. Finally, he mustered all his forces together, and at midnight admitted them into the Royal residence, giving strict orders to slay upon the spot the Sovereign, by whose kindness he had risen to his present power; which treacherous design was only frustrated by the determined bravery of Kosrou, and his few faithful body-guards, who cut their way through opposing numbers, and by dint of hard riding gained the settlement of the English at Surat in safety. The population of that neighbourhood being chiefly favourable to the dethroned prince, he was enabled in a short space of time to raise a few troops, with whom he resolved to march against his adversary, who was, however, too strongly guarded in his capital, Amedabad, to afford the least probability of success to an invader. Discouraged by the unpromising aspect of their leader's affairs, the followers of Kosrou shortly began to drop off and return towards their homes, until scarcely a dozen faithful subjects adhered to his failing cause. Thus it is that many are friendly and kind to man when he has a prospect of prosperity, who heartlessly forsake and disown him when that prospect is no more;—when the suns of summer cease to warm, the swallow retires to a distant clime.

"Depressed in spirits, and not knowing whither to direct his steps, Kosrou and his still faithful few yet lingered in the vicinity of Amedabad, where they learned that the usurper had already thrown aside the mask and displayed himself to the people in his real character. Instead of redressing grievances, he still further added to their weight;—in all disputes he would become the referee, and rarely failed to profit as well by the bribes of the successful litigator as by the fines levied upon his defeated antagonist. This ill-got treasure was expended in procuring mercenary guards to defend his person and support his throne, whilst his fear and distrust of the chiefs of the nation increased daily, lest some one amongst them should succeed in using him as he had used his master. Thus tyranny is ever fearful, and an evil conscience strews the couch of slumber with a thousand terrors.

"Great were the privations endured by the rightful prince whilst his rival thus exercised despotic sway, yet was he unwilling to remove far from the principal scene of usurpation, hoping that some auspicious opportunity might offer by which he might regain his lost dominion. He was compelled to live in the utmost privacy, and frequently to resort to various arts, to escape the watchful spies of his suspicious enemy, who were ever on the alert. He had dismissed all his attendants except one, with whom he wandered about from place to place, obtaining such information as they could, under the semblance of two negroes, having imitated that complexion with considerable success. Nor were their fatigues destined to be unattended by good fortune: seldom do enterprise and unceasing exertions fail to obtain their end; and though vice ofttimes seems to flourish for a season, seldom does it fail, at last, to sink defeated at the foot of virtue.

"As the prince and his comrade, in the usual disguise, were one day passing through a tangled wood, they were startled by hearing the gallop of a horse at his utmost speed, and the animal shortly afterwards appeared dashing along immediately in their front, and bearing upon his mane the almost insensible form of a lovely maiden, whom Kosrou instantly recognised as the gentle daughter of his malignant foe. The terrified animal was quickly stopped, and relieved of his scarcely conscious burden, who was then borne with the greatest despatch, through the least frequented paths of the forest, to the secret retreat of the royal fugitive, where the most effectual means were resorted to for restoring animation, until the beauteous being unclosed her eyes, and inquired with bewildered astonishment where she was, and from what peril she had been rescued. Of this she was soon informed, and, in return, stated that she had been riding out with a few attendants, and her horse had been so terrified by the sudden and near approach of a leopard, that he had defied control, and dashed into the forest, distancing all her attendants, and bearing herself (almost deprived of life by terror) with him. A few words served to inform the fair captive into whose hands she had fallen, and it was with difficulty she could then be convinced of her safety; fully expecting that the deeply-injured prince would strive to avenge himself upon the perfidious father by the slaughter of the child. This, however, neither accorded with the heart nor the policy of the captor, who immediately saw the vast advantage he had gained by the possession of so valuable a hostage; by whom accompanied, he made the best of his way to Surat, and sheltering himself beneath the British lion, despatched messengers to his despotic foe, informing him of the safety of his daughter, but at the same time refusing to listen to any terms for her liberation except the restoration of the throne of Guzerat.

"The crafty Furrukhsir in vain exhausted all his wiles to obtain the release of Mhirra upon terms less arbitrary, but Kosrou had been already too deeply imposed upon to be a second time deceived: to the English he trusted for protection, and at length the foiled usurper agreed reluctantly to the proposed conditions. The place of meeting fixed upon was beneath the banian tree already mentioned, to which scene we must now again turn our attention.

"Besides the parties already mentioned and their attendants, there was another individual present who requires our notice: this was Edgar Etheridge, a young and noble-looking British officer, who had accompanied Kosrou to the spot, in order to prevent any unfair dealings on the part of his adversary, and a small troop of horse were drawn up at a short distance, ready to obey the signal of their leader, should treachery appear to be meditated. By the direction of that leader's eyes, and the ardent yet tender expression of his countenance, it might easily be guessed what formed the subject of his thoughts at this period; and a slight convulsive motion several times denoted his wish to spring forward to the support of the lovely and fragile form that seemed sinking between the uncertainty of hope and fear; yet as often did the dread of offending, and the awe inspired by virtue and beauty in affliction restrain his steps."

(To be concluded in our next.)

The Bouquet.

"I have here only made a nosegay of culled flowers, and have brought nothing of my own but the thread that ties them."

WHAT IS GENTILITY?

A MORAL TALE.

(Continued from our last.)

CHAPTER XXII.

A consulship in a port of the Mediterranean became vacant. It was a place of great commercial importance, and of course of considerable dignity and emolument. No sooner was the circumstance generally known than hundreds of applicants sued for it—Charles was urged by some of his friends to put in his claim, with assurances that none had so good a chance of success. To such advice Charles uniformly replied, that the Secretary was well acquainted with his talents, such as they were, and if he merited the place would, he was certain, give it to him without solicitation. His mother hearing of the affair, added her entreaties to the advice of his friends. "My dear mother," said he, "many years ago when you wished to *push* me into higher society, I told you I never would be *pushed* into it, neither will I into higher employment; what I said then I now repeat; if I rise, it must be by my own merit, and not by favour or solicitation." He adhered to his resolution, and was rewarded for it. The known intelligence, the tried probity of Charles, served him more effectually than hundreds of recommendatory letters.

He now discovered the correctness of Mr. L—b—e's advice, in regard to learning the European languages. It was his knowledge of the Italian, Spanish, and French languages, which determined the choice of the Secretary. Among the applicants many were persons of equal merit with Charles, but he alone had an acquaintance with all these languages, a circumstance peculiarly desirable in a place of such extensive commerce, whose inhabitants were a mixture of all nations, and with whom not only a daily intercourse with our people subsisted, but occasional difficulties arose, which could be more efficaciously adjusted by a Consul who understood their various languages, than by one who had to depend on an interpreter. The place was given to Charles. The natural taste which Lydia had for painting, had made her take an interest in its sister arts, and the society of artists had kindled this taste to enthusiasm; it was, therefore, with delight she heard of her husband's appointment to a place that would afford her an opportunity to see many of the subjects of which she had only heard, and of enlarging her knowledge on this subject of her enthusiastic admiration.

To Charles, too, the greatest gratification he felt flowed from a kindred source. His mind was early imbued with a love for ancient literature, and the idea of treading on the soil on which heroes had trod-

den, of living in the land where poets had lived, elated him beyond what any hopes of honour or wealth could have done.

But it was the honour her son derived from such an appointment, that reconciled good Mrs. M'Carty to the idea of parting from him and her dear Lydia, and perhaps even this powerful incentive would not have been sufficient to still the regrets of her affectionate heart, had she not been so engrossed by her little grand-daughter, and enjoyed, besides, the comfort of Timothy's company.

Catharine urged her brother to carry her with him; but this he was convinced he could not do, without endangering the happiness of his wife. Lydia was too conscious of her own worth, and had too much spirit, not keenly to have felt the scorn with which Catharine treated her at the time of her marriage—afterwards of her neglect and indifference. As her husband's sister she treated her with civility and even kindness, but as for friendship she felt that was impossible between persons so every way opposite.

Besides, Catharine's fretful, peevish temper was too visibly destructive of domestic harmony for Charles to think, for a single moment, of introducing such a source of discord into the bosom of his happy family. Thus did Catharine lose, by her folly and her indulged ill-humour, the pleasure and advantage she might have found in being the companion of her brother. Vice, it is often and truly said, brings its own punishment; so does folly; so does selfishness.

The bustle of preparation was soon over; the day of departure arrived. The previous evening the family all met round the paternal fire-side. Good Mrs. M'Carty, in her rocking chair in one corner, had drawn Charles down on a chair beside her, and, while she held his hand in hers, from time to time would look mournfully in his face; then take off her spectacles and wipe them; then put them on, and again look at him, and, sighing deeply, said—"Who knows, Charley, but it may be the last time these old eyes will look upon that kind face!" She could say no more.

Mr. M'Carty, who sat in his arm chair on the other side of the fire, responded her sigh, and added—"Why, deary, we are growing old, and such things are in the course of nature."

Timothy had taken his little nephew on one knee, and his daughter on the other, and was so engaged in caressing them, that he did not notice these gloomy forebodings.

Catharine was in a fit of the sullens, and sat pouting with so long a face that one might have supposed she, too, was in affliction.

Paul, rising hastily, walked backwards and forwards across the room, to conceal the emotions struggling in his bosom and the tears that filled his eyes.

"Pho, pho," cried Lydia, whose elastic gaiety nothing could depress, "why do you talk of parting? talk rather of the happy meeting we shall have. I wonder if we shall all know each other. I am sure I shall be so improved that I shall have to introduce myself—and you, Catharine, by what name shall we greet you?—and Paul will be as grave a papa as Charles himself; and the little Nina will be the matronly Mrs. Tilton.—Hey, Paul?"

"I tell you, for the hundredth time, sister, you may choose for me house, hound, or horse, but not a wife; so pray never say another word to me about that child."

"And your pet, mother," continued Lydia—"let me charge you not to spoil *her*."

"Then you do think she spoiled some one else," said Catharine, spitefully.

"Dear me, dear me," said Lydia, "I have made bad worse. Come here, Tippo, come here, Charley," continued she, taking her child by the hand, and whistling to her dog to follow—"Come, let us look if we cannot find something to drive dull care away."

She was not long out; every one was silent and melancholy, when the door opened, and this laughter-loving dame entered, and, making a low courtesy, begged to introduce two strangers, and made way for their entrance; one was little Charles, now dressed in the complete uniform of an officer, with a fierce cocked hat and wooden sword by his side, and Tippo metamorphosed into a soldier.

"Make your bows to this good company, gentlemen," said she. "This, Sir, to Mr. M'Carty, is Uncle Toby—this, his man Trim;" and in this way she conducted them round, making them bow most ridiculously. Every one, Catharine excepted, was diverted, and laughed aloud; as for her, she turned away in disdain, exclaiming, "Pshaw, what nonsense!"

The officer then drawing himself up in the most stately manner, began to drill the soldier. Lydia had forgotten a musket for Tippo, and seizing the hearth brush, she very unceremoniously broke off the handle, and put it in his paws. Fond of fun and frolic, this young mother had often amused herself in this manner, and had spared no pains to perfect both Charles and Tippo in their exercise, which they now performed to the diversion of the company. When Tippo showed signs of weariness, she ran up to her father-in-law, and begged the loan of his pipe, which she put in Tippo's mouth. This, too, he had learned, and amidst bursts of laughter, he gave several whiffs, till Lydia designedly giving him a push, the pipe fell and broke in twenty pieces. By these and such like tricks, of the ever sportive Lydia, all gloom was banished, and they sat down to the supper-table in a cheerful, if not a merry mood. But though Lydia thus succeeded in driving away the thoughts of parting, the parting moment came, though unthought of. If sorrow *will* come, it likewise *will* go; even those who wish to keep it can seldom do so, for its impression on the human heart is, as the poet says, as soon effaced as a furrow in the ocean. As for Lydia, she never in her life tried to keep a sorrow. Sadness flew her presence, and gladness followed her steps. The next morning was bright as Lydia's hopes, the wind fresh as her spirits. "Come," said she, drawing her husband from the fond arms of his mother, "I never allow any one to cry, except for joy; so, dear mother, save your tears till we return."

No one felt the absence of Charles and Lydia so sensibly as Paul. He had always lived with them; their interests were identified; their pleasures the same, and perfectly happy at home, he had formed but few acquaintances abroad. He gave up the house in which he had lived with Charles, where he felt lost and lonely, and took lodgings in the house of a widow, who kept a boarding house. He applied himself more closely than ever to business, feeling that occupation better than any thing else supplied the void created by the absence of his sister. He was now a master-builder, and employed a great number of workmen; and such was his reputation for superior skill and superior honesty, that on all occasions he had the preference. His frank and social manners made friends of all classes, while the excellent education he had received from his father, and the liberal studies he had afterwards pursued under the direction of Mr. L—b—e, and the society of artists and literary men, fitted him to appear with advantage in the best company. When Catharine was aware of his high standing among his fellow-citizens, and the fortune he was accumulating; when she perceived his improved looks and manners, she was anxious to renew an acquaintance which she had formerly disdained. But Paul was now acquainted with her real disposition; he could easily have overlooked her contempt of himself, but when shown to his sister, it was more than he could forgive. The neglect, too, with which she treated her parents, showed a bad heart, in his eyes, far worse than the most silly vanity.

All the pains she now took to please the young *architect*, as she called him, were thrown away, and she was left to vain regret for her past folly and unavailing wishes for the future. While she mixed in gay society the only motive which guided her in the choice of acquaintances, was to *raise* herself, and feeling her own insignificance in every respect, she knew this could be done only by fastening herself on those above her. Though sensible that her consequence was entirely derived from her associations, she displayed it with as much haughtiness as if inherent in herself, thereby making herself as much an object of ridicule to those above her as of dislike to her equals.

Without any cheering recollections of the past, the present was a void, and the future could present nothing to her view, but an old age without friends and without respect. Had she been contented with the situation in which Providence had placed her, her education and fortune would have given her consequence in the eyes of her equals, and she might have been respected, beloved, and happy, and the wife of a man, who, rising by his own worth in the scale of society, would in the end have raised her to the summit of her ambition. In the arithmetic of society, woman is a quantity—man is the denominator, which gives to that quantity its value.

In the house where Paul lodged, were several members of Congress, and among them a representative from one of the Western States, who had brought with him his only daughter, that she might take a peep at the great world, and receive a little polish from the acquaintance of great people. As the daughter of a member of Congress, she was visited by the first people, and invited as usual to the whole round of parties given by people in office. She dined successively at the President's, with the Secretaries, the Foreign Ministers, and with the wealthier citizens who entertained strangers. But the poor girl, every where a stranger, and surrounded by strangers, felt alike awkward, lonely, and uncomfortable. Brought up to domestic industry, neither had her habits nor taste calculated her to enjoy the pleasures of the gay world. The fine dresses her father gave her, and the fine folks to whom he introduced her, could not compensate for the comforts and affections of her native place.

It was in this mood of mind she became acquainted with her fellow lodger, and the more she knew of Paul, the less inclination she felt to go to parties.

Before Congress adjourned the affair was settled, as might be expected between two young persons mutually agreeable to each other who lived in the same house.

The only condition the father annexed to his consent, was, that Paul should live with him. "I am now an old man," said he; "this is my only child, and it would be hard to part with her; but return with us, and you shall not only have my daughter, but my houses and my farms, and my funds."

There was nothing in Paul's situation to counterbalance so many advantages. His sister and dearest friend were far away, and even his benefactor, Mr. L—b—e, had removed to such a distance as forbade the hope of ever seeing him again.

The treaty was signed, and our young mechanic went into one of the Western States, where, even without such a powerful connexion he would by his own talents and virtues have soon risen to respectability and influence. His manners were remarkably popular, and his information superior to that of most with whom he associated. His own savings, added to his wife's property, made him one of the richest men in the state, and added weight to his talents and social virtues. It was not long before he was chosen a member of the state legislature, where he made himself acquainted with political principles and the routine of public business. In this new career he employed the same care and diligence that he had applied to his first occupation, and by extensive reading and deep study he made himself master of the political economy, the natural resources, the past history and future prospects of this immense and growing country. He devoted himself ardently to the promotion of its best interest, and being convinced that *education* was the corner stone of the temple of liberty, and that unless built on this foundation, it could never resist the attacks of ambition, the encroachments of power, or the conflict of rival interests,—to this point he turned all the influence which his fortune and character gave him, and when he afterwards was sent to Congress, he was governed by the same honest and enlightened zeal.

(To be continued.)

Correspondence.

MATHEMATICAL SOLUTION.

TO THE EDITOR.

SIR,—Permit me to present you with the following solution to *J. W. C.'s* question in this day's *Kaleidoscope*.—Yours, &c. *P. R.*

Tuesday, April 6, 1830.

$$\frac{3}{2}\sqrt[3]{6\sqrt[2]{x}} = \sqrt[2]{x}$$

$$\text{Cubing both sides...} 6\left(\frac{27}{8}\right)\sqrt{x} = x\sqrt{x}$$

$$\text{Dividing by } \sqrt{x}\ldots x = \frac{162}{8} = 20\tfrac{1}{4} \text{ years.}$$

The proposition by *A Tyro* may be very handsomely solved after the manner of Bonnycastle, but in my opinion it does not admit of a clear and simple solution, such as he requires.

DRAUGHTS.

TO THE EDITOR.

SIR,—A neat and richly inlaid mahogany draught board having been forwarded, by some unknown hand, to Mr. Samuel Egdell, Black Swan Inn, Alnwick, "to be by him presented to the person who, agreeably to the underwritten rules, &c. shall be adjudged the most skilful draught-player," I have taken the liberty to furnish you with the following copy, hoping that, if admissible into the columns of the *Kaleidoscope*, it might, perhaps, be interesting to *some* of the numerous readers of that paper.

Yours, &c. R.

Alnwick, March 22, 1830.

RULES AND REGULATIONS OF PLAY.

1.—"No person making, or having made, any bet or wager, or having, directly or indirectly, any interest in any bet or wager respecting this prize, to be allowed to become a competitor for the same; or to enter the room wherein the players are assembled during the time of play, *on any condition whatsoever*."

2.—"No person to be admitted but the players, or whom a majority thereof may think proper."

3.—"The players, whose names must be entered *at* or *before* (as none will be admitted *after*) eleven o'clock in the forenoon of the 12th April ensuing, to be *paired* or *matched* for *each* round respectively, by ballot, and the play to commence immediately after.

4.—"And in every pair or match wherein one of the players shall win five out of the first six games, such six games to constitute the rubber; and the winner of the five to be declared victor.

5.—"In every match wherein one of the players shall win six out of the first eight games, such eight games to constitute the rubber; and the winner of the six to be declared victor.

6.—"In every match wherein one of the players shall win nine out of the first thirteen games, such thirteen games to constitute the rubber; and the winner of the nine to be declared victor.

7.—"In every match wherein one of the players shall win twelve out of the first eighteen games, such eighteen games to constitute the rubber; and the winner of the twelve to be declared victor."

8.—"And in every match to which none of the above rules are applicable, *thirty-one* games to constitute the rubber, and the winner of *sixteen* to be declared victor."

9.—"It is to be distinctly understood, that throughout the whole of the play for this prize, *drawn* games are *not* to be taken into account."

10.—"One hour's respite from play, if required, to be allowed for the purpose of taking refreshment, &c. between the *termination* and *commencement* of the rounds. And if the matches necessary for ascertaining the winner of the prize be not completed at twelve o'clock p. m., the players *immediately concerned* may, if they can agree on that head, adjourn till ten o'clock on the following morning, at which time *precisely* they must be ready to resume play, or otherwise be debarred playing any more for, or having any further interest in, the said prize."

11.—"Any person offering or causing any annoyance to any of the players by means of *boisterous* or *clamorous talking*, *whistling*, *singing*, or *otherwise*, whereby any of the company may be prevented playing so well as they otherwise might do, such person to be treated with immediate expulsion from the room, and not to be again admitted during the time of play."

12.—"All disputes, if any, to be arranged by a majority of the players present, agreeably to the rules, &c. of Sturges and Pohlman; and should a casting vote on any occasion be required, such vote to be given to him on whom it shall fall by ballot."

HEADS OF ENGLISH HISTORY IN VERSE,

WITH A MNEMONIC DOGGEREL COUPLET CONTAINING THE YEAR IN WHICH EACH KING ASCENDED THE THRONE.

(Continued from our former papers.)

GEORGE I. 1714.

George the First, as Elector of Hanover known,
Succeeded illustrious Anne on the throne;
And acted so prudently in his new station,
As to gain the respect and esteem of the nation.
Now parliament-men were for seven years elected;
The South Sea delusion was form'd and detected;
To prevent the small-pox a new method was tried;
And the King, on a journey, at Osnaburgh died.

The German, first George, by the people's desire,
Was quickly enabled the throne to ACQUIRE.
7 1 4

GEORGE II. 1727.

George the Second, though plain in his mode of address,
Sway'd the sceptre of Britain with brilliant success;
His virtues more useful than splendid appear'd,
His justice was spotless, and his name was rever'd;
Rebellion was crush'd, and good order maintain'd,
Whilst by sea and by land many vict'ries were gain'd.
The British Museum now open'd to view,
And the Old Style was chang'd, in this reign, for the New.

Britannia gave Georgy the Second her voice,
Though Jacobites' little approved of the CHOICE.
7 2 7

PERMANENT NIGHT ASYLUM FOR THE HOUSELESS POOR.

As the committee appointed at the late public meeting at the York Hotel intend to apply to their fellow-parishioners, at the annual vestry meeting this day (Tuesday,) to obtain their sanction and co-operation in the establishment of a permanent Night Asylum for the Houseless, it may not be amiss at this time to offer a few remarks on the probable expense of erecting a suitable building for the purpose. The calculation cannot be made with any certainty until it be ascertained whether the ground must be purchased, or on what terms it will be obtained. We must, therefore, leave that material item entirely out of the calculation for the present, and pass on to observe that a suitable building, constructed on the best principles, with an especial regard to warmth, ventilation, and security from fire, would probably cost about six or seven hundred pounds, and that fitting up the interior with suitable dormitories, seats, stoves, &c., would amount to about an additional hundred pounds. There ought to be good arched vaults below, which, if the building should be in a convenient situation, would probably yield a rent equal to the interest of the money spent upon the whole erection. We presume that when the building is finished, it should be made over in trust to certain persons chosen by the subscribers, who, in case the Asylum should be discontinued as unnecessary, at any future time, should be empowered to sell or to let the property, for the joint benefit of the original subscribers.

We have already observed that application will be made to the annual vestry this day (Tuesday) for their co-operation in carrying into effect the resolutions unanimously adopted at the public meeting to consider of the propriety of establishing a permanent Night Asylum for the houseless poor in Liverpool, and we respectfully but earnestly entreat the parishioners, by pecuniary means, or by a recommendation to the public, to sanction an establishment which, under proper management, will not only reflect honour upon the town, but will most materially tend to alleviate human suffering, to prevent midnight outrage, and ultimately to abate, if not wholly suppress, that intolerable nuisance, public begging.

As a complete list of those who stand pledged to support the establishment has never yet appeared in the *Kaleidoscope*, we shall now supply the deficiency, merely premising that the report of the proceedings at the public meeting which has been very extensively circulated, will enable those who have not yet made up their minds on the subject to decide for themselves as to its claims to public support.

We trust that the respectable gentlemen, who, at the public meeting, unanimously approved of the establishment of a permanent Night Asylum for the houseless poor will attend on Tuesday.

In conclusion, we would observe to those who are apprehensive of any evil arising from the establishment of a permanent Night Asylum for the houseless, that the probable good which may result from it warrants the fair trial of an experiment which can be at any moment relinquished should it be found not productive of the benefits which are anticipated from it. The money expended in the building will not be thrown away, as the premises may be converted to some other use, and our townsmen will at least have had the merit of having done their utmost to mitigate the sufferings of the most forlorn and wretched of their fellow-creatures.

List of the Money ready to be advanced in support of a Permanent Night Asylum for the Houseless Poor in Liverpool.

	£			£	
Rigby Wason, Esq. per E. Smith	20	0	Mr. John Davies, 8, Whitechapel	1	1
Mrs. Claremont, per do.	10	0	R. Preston, Esq.	5	0
Rev. Mr. Cardwell per ditto	10	0	Mr. L. Heyworth (yearly subscription)	1	0
Rev. Dr. Raffles	5	0	Mr. Thompson	1	0
Rev. Mr. Grundy	2	2	Messrs. Barned	5	5
Rev. W. White	2	2	James Cropper, Esq.	20	0
D. M. per E. Smith; a balance not precisely ascertained, presumed to be about	20	0	John Cropper, Esq	15	0
			Edward Cropper, Esq.	15	0
			Mr. Charles Bird	5	0
Mr. Lynn, Waterloo Hotel	5	0	R. F. Breed, Esq	1	1
Mr. E. Smith	5	0	John Eden, Esq.	5	0
Mr. Jas. Mullineux	5	0	Lieut. Morrison	1	0
Mr. Charles Grayson	2	0	Roger Fisher	2	0
Mr. E. Keet	2	2	John Wright, jun. Esq.	5	0
Mr. T. Coglan	1	1	Miss Smith, Clapham,	5	0
Mr. Fairfield	5	5	R. Foxton	0	5
Mr. L. Mozley	5	0	Messrs. Coleman and Chapman	0	10
Mr. W. Lassell	2	2	Mr. Oliver Beckett	0	5
J. T. 5s.—S. & E. R. 5s.	0	10	Rev. W. Scoresby	5	0
S. Woodhouse, Esq.	5	0	Messrs. Badenach and Co	1	1
A few friends at Mrs. Parker's, per M. G	0	10	A Friend, G. H	0	10
G. Henderson, Esq	2	2	Richd. Rathbone, Esq.	5	0
Mr. John Griffith	1	0	P. Donovan	0	5
Dr. Rutter	5	0	J. A. Yates, Esq.	5	0
Mr. Samuel Martin	2	2	O. S. per E. Smith	5	0
Thos. Morecroft, Esq.	5	0	Samuel Hope, Esq.	15	0
W. Freme, Esq	5	0	Thos. Thornely, Esq	5	0
Jas. Atherton, Esq	5	0	C. Horsfall, Esq.	5	0
William Brown, Esq	5	0	Dr. Crompton	5	0

To Correspondents.

HISTORICAL MNEMONICS.—A correspondent, who signs *A Student*, reminds us of our promise to point out an air which will suit the historical verses and mnemonical dates which are now in course of publication in the *Kaleidoscope*. We have not forgotten our promise, and have a very appropriate tune in our mind which we shall name when we have brought the mnemonical verses down to the present reign. The series will be completed in our next, after which any person who will be at the pains to commit to memory 320 lines, or 32 verses of ten lines each, will not only acquire some important facts relative to the history of England since the Conquest, but will indelibly imprint on the mind the date of each reign, which always forms the last word of the mnemonic couplet. A child with a retentive memory may get the whole by heart with ease in a few days, or a week at the utmost. We have some thoughts of publishing the whole with the music.

DISEMBODIED SPIRITS.—The letter of *Josephus*, after having been arranged in our pages, was withdrawn until next week, in order that we may accompany the insertion with some remarks upon certain erroneous assertions it contains.

MATHEMATICS.—The engraving for the problem of *T. H.* was not ready in time for this week's publication. The communication shall appear in our next; together with the solution of *P. B.* which, after having been prepared in the type, was obliged to be withdrawn for the present week. The answer of *C. M.* to *J. W. C.* shall also appear in our next.

The lines for music, by *Josephus*, are in reserve for the next *Kaleidoscope*.

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